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ABSTRACT

Innovation in inservice education and training of teachers (INSET) is examined within the context of the general pattern of teacher education in Canada and by means of two case studies of INSET programs--Perfectionnement des Maitreseen Mathematiques (PERMAMA) and the Atlantic Institute of Education (AIE). It is stated that, at present, most INSET activities fall into two large families. First, there are those activities planned and carried out by Ministries of Education either regionally or locally. This family has an incredible variety of approaches to teacher education; it is almost impossible to describe and assess its programs because they occur in ten different provinces without a unifying central agency. The second family of INSET activities is those that are either university based or related. PERMAMA and AIE were chosen as representative of this family. Both programs contain several aspects that may be pointing to future directions in INSET in Canada. These aspects are offered as tentative conclusions to this examination of INSET: (1) INSET planners must shift the center of focus to the teacher-on-the-job and make every attempt to understand the problems teachers face in today's schools; (2) INSET is basically a curriculum problem where the learners are teachers; (3) teacher education seems to have been largely concerned with producing teachers as technicians in the transmission of knowledge; (4) in education, including INSET, we are still living off the 19th century--its schools, its educational laws, its systems of beliefs, attitudes and values, and its educational structures. (MM)

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CENTER FOR EDUCATIONAL RESEARCH AND INNOVATION (CERI)

INNOVATION IN IN-SERVICE EDUCATION AND TRAINING OF TEACHERS

- CANADA -

by

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Université du Québec à Montréal

This case study is one of a series carried out
within the CERI programme with the help of a
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Provisional Report

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Preface

Because of limited time available for the preparation of the Canadian report only two case studies are presented here.

I am very grateful to Gilbert Paquet, director of PERMAMA, for generously making available to me both published and unpublished documents on this project. Similarly Gary Anderson, Co-Director of the Atlantic Institute of Education, in Halifax, furnished an abundant literature on the Institute and its various projects.

In addition, I am endebted to both Gilbert Paquet and Gary Anderson for granting me interviews. Finally I wish to thank staff members of PERMAMA and the Atlantic Institute of Education for answering my questions with good cheer and remarkable frankness. The interpretations presented in the case studies are my own, and I hope I have not deformed the impressive work being done in these two projects.

Section 1 - The National Context.

Under the provisions of the British North American Act of 1867 each of the ten Canadian provinces have individual jurisdiction in the field of education. There does not exist a centralized Federal system of education, but rather ten separate Ministries of Education. The non-federalized Canadian system of education makes it difficult to formulate generalizations that apply uniformly throughout the country. As Canadian education has evolved in the last hundred years many individual traditions, points of view and attitudes have remained, giving a local color to many specific regions, and to their respective educational practices and structures. This pattern of variation bears considerable resemblance to the pattern of education in the United States where each state is the responsible central unit of education. For Canada, however, there is the significant difference that we do not have an "Office of Education" in Ottawa comparable to the one in Washington.

A. The general pattern of Teacher Education in Canada

In discussing an area such as teacher education, there does exist, however, a rather homogenous set of ideas, structures and practices that renders it possible to make certain assertions that hold across the country despite specific educational variations from province to province.

To simplify the presentation here I shall group some of the provinces. Quite frequently in discussions of Canadian education the ten provinces are grouped into four regions: (1) the Western region (British Columbia, Alberta, Saskatchewan, Manitoba), (2) the province of Ontario, (3) the province of Québec, and (4) the Atlantic provinces (New Brunswick, Newfoundland, Nova Scotia and Prince Edward Island). The 1975 Review of Educational Policies in Canada has used such a grouping, and I shall similarly adopt this mode of classification.

Prior to World War II the education of teachers in Canada was based on a model nearly identical to the general model found in many European nations and in the United States. Elementary school teachers were, in general, trained in normal schools, while secondary school teachers were graduates of either a university, or a training college or a superior normal school (école normale supérieure). The organizational structures of these institutions are rendered more complex when we consider that they were usually divided by religious affiliation (Protestant or Catholic) and by language (English or French). In the Catholic sector, particularly in Québec, many of the religious orders were teaching orders, and consequently the education of these teachers was intermixed with their religious training. The training of secondary school teachers placed heavy emphasis on academic subjects with limited or no exposure to professional courses in education. For elementary school teachers there was heavy emphasis on professional training, and some limited provision for work in the academic subjects to advance the teachers to a level of knowledge only slightly more advanced then the level of knowledge of the pupils she would be teaching in the future. The training period for an elementary school teacher varied from one to three years, depending on the institution attended. The various lengths of the training period, and the variety of institutions, resulted in a bewildering array of diplomas, licences, "brevets" and certificates. In some provinces it was possible to become a legally qualified elementary school teacher after eleven years of schooling, plus one year of training in a normal school.

After 1945, there was a movement to up-grade the level of education of elementary and secondary school teachers, and to raise the standards for certification. In the Western provinces, between 1945 and 1964, the normal schools and teachers' colleges were phased out and all teacher education was eventually integrated with the provincial universities. This integration of teacher education into the universities was accomplished by agreements between ministries of education and universities with provisions for the establishment of joint boards of teacher training and certification. Statistics for the Western provinces, comparing the percentage of teachers holding university degrees in 1960-61 and 1970-71, are indicated below in Table One.

PERCENTAGE OF TEACHERS WITH UNIVERSITY DEGREES
IN ELEMENTARY AND SECONDARY SCHOOLS
in 1960-61 and 1970-71

	1960 - 1961		1970 - 1971	
Province	Elementary	Secondary	Elementary	Secondary
British Columbia	17.0	69.9	38.4	81.3
Alberta	10.7	61.6	45.5	80.5
Saskatchewan	4.0	57.8	22.7	74.1
Manitoba	8.7	64.7	24.9	74.3

Source: Statistics Canada, Survey of Education in the Western Provinces, 1971.

Table One

The change in the percentage of teachers holding university degrees is one index of the impact in the modification of policies in teacher education and certification in the Western provinces.

In the province of Ontario teacher education is provided by nine universities and one college operated by the Ministry of Education. According to a 1972-73 statistical summary there were some 3,100 education students enrolled in university programs leading to the first professional teaching degree. Three universities offer graduate work in education. In 1970-71, there were 2,100 students in masters of education programs and over 430 in doctoral programs of education. Compared to the other Canadian provinces, Ontario is at an advanced stage of university based teacher education, with many teachers holding graduate degrees.

Prior to 1969-70, in the province of Québec, teacher education was basically by means of normal schools, usually divided by religious affiliation and language. In 1969-70 the majority of normal schools were integrated into existing universities, and a new university (the University of Québec) was created mandated to take over a good share of the responsibilities for teacher education. The University of Québec is divided into a number of branch campuses. At the largest of these campuses (Montréal) a survey conduced in the fall of 1971, only two years after the creation of the university, indicated that half (51%) of the total undergraduate students were enrolled in teacher education programs. Of the 4046 students in teacher education programs, 1865 (46%) were in initial training, while 2181 (54%) were experienced teachers enrolled in Part-time courses. From these figures it can be seen that one-quarter of all the undergraduate students at the Montréal campus are enrolled in a university part-time program that functions as In-service Education. When 25% of the total undergraduate students of a university are in INSET activities, this represents a good share of the total investment of time, space, personnel and monies of the entire university. The policy to turn over the responsibility for teacher education to the universities throughout the Province of Québec, on practically an over-night basis, has had some rather drastic consequences and given rise to numerous difficult problems. In fact, I feel obliged, later on, to comment concerning the general strategy of transferring the responsibility for teacher education from normal schools and teacher colleges to universities in light of the Canadian experience.

The picture for the Atlantic provinces is somewhat more complicated. In New Brunswick agreements were reached in 1973 to transfer the responsibility for teacher education from the Ecole Normale de Moncton to the French University of Moncton. On the English side, the former Teachers' College at Fredericton was transferred to the University of New Brunswick. In Newfoundland a normal school established in 1921, was transferred to Memorial University College in 1934, and presently Memorial University is the only institution in Newfoundland that trains teachers. For Prince Edward Island, with the creation of the University of Prince Edward Island, teacher training was established in this university transferring responsibility from two other schools (Prince of Wales College and St. Dunstan's University). Finally, for Nova Scotia, teacher candidates may receive training at Nova Scotia Teachers' College or at one of six cooperating universities. The creation of a new institution in Halifax, Nova Scotia, the Atlantic Institute of Education, in 1970, also provides new INSET activities and will be treated as the second case study of this paper.

Through this maze of changes what emerges is that in the Atlantic Provinces there is now one teachers' college (Nova Scotia), and the shift of teacher education to universities is now almost complete. In the Atlantic provinces there remains a serious problem of coordinating limited resources for teacher education, as will be discussed in the case study of the Atlantic Institute of Education.

From this brief sketch the general pattern in teacher education in Canada emerges as a pattern of evolution from normal school and teacher college institutions towards university based training. One frequent educational profile for a prospective teacher at present is the obtaining of a first university degree (The B.S. or B.A.) in 4 years, followed by an additional year of professional training to obtain a Bachelor of Education degree (the B. Ed.). However, some universities offer integrated four-year programs for obtaining the B. Ed. degree. Québec has created a different education profile as a result of the extensive education reforms of the 1960's. A new institution has been created to provide either advanced vocational training in three years, or to provide a bridge, of 2 years, between the five year comprehensive high school (polyvalents) and the three year period of undergraduate university studies in a specialized field. These institutions, called Cegeps (Collège d'enseignement général et professionnel), provide a period of "general education" for future university students, who will subsequently spend three years in a University program specialized by discipline. The profile for the education of a prospective teacher, in the over all Québec educational system, is now six years of elementary school, five years of polyvalent, two years of CEGEP and three years at university leading to the first professional teaching degree. Certification is obtained after a successful year of teaching in probationary status.

B. INSET in Canada

With the general trend over the last thirty-years to up-grade the level of teacher education, by shifting the responsibilities to universities and by increasing the certification requirements, there have evolved two population pools of teachers in Canada in terms of level of training: those with at least one university degree and those holding one or more non-degree credentials (certificates, licenses, etc.). In the last decade there has been a massive effort at re-training this second group of teachers by In-Service Education. It is important to note that in terms of sheer quantity the dominant form of In-Service Education that has taken place, and continues to take place, is within university degree programs. However, to focus on this form of INSET exclusively is rather misleading, since there is also considerable INSET activity outside of the university structure. At this point it seems desirable to say a few things concerning non-university type INSET activies, but most of the commentary will concern university-based INSET, for that is where the major activity seems to be.

(1) The variety of non-credit INSET activities and opportunities

Canadian elementary and secondary school teachers have available to them a host of opportunites to update their professional knowledges and skills. In each province the Ministry of Education provides a number of services specifically intended to provide teachers with updating information concerning curriculum development, experimental programs, new pedagogical practices, etc. Some ministries also provide summer programs and sponscr, during the school year, a number of colloquia or symposia on a variety of educational topics. Sometimes, through its various publications addressed to teachers, Ministries of Education will provide extensive analysis and discussion of such topics as Individualized Instruction, Continuous Progress, Open-Area Schools, the use of media, learning difficulties, school-sponsored recreational activities and so on. Providing teachers with this kind of information appears to be less systematic than, let us say, a highly structured university course addressed to experienced teachers, but for many teachers this type of information constitutes a major source for keeping up-to-date on educational theory and practice. The great difficulty, in considering this type of activity as a form of INSET, lies in the fact that it is very difficult to evaluate the impact of such a diversity of activities on school personnel.

The bicultural heritage and the geographical location of Canada place it in a very favorable position to take advantage of number of other INSET opportunities. One might take as an example the opportunities for up-dating provided by professional teacher organizations not only in Canada, but in North America and Europe as well. The role of professional teacher organizations as a form of INSET is, once again, one of those areas that is very difficult to evaluate. But there is no question that for many teachers attendance at symposia, colloquia and general meetings of subject-matter organizations (mathematics, science, language, history, etc.) constitutes a major source of information. Canadian teachers not only have available a variety of professional meetings by province and federal level, but many are also active in American professional associations such as the National Science Teachers Association, the National Council of Teachers of Mathematics, The National Council of Teachers of English and many others. There also exist a number of teacher exchange programs between Canada and Europe, especially Great Britain and France.

In addition to In-Service opportunities provided by Ministries of Education and professional groups, there exists within each province a number of INSET activities provided by regional administrative units and by local administrative units such as school boards. In a number of provinces a specified number of days are set aside in the school calender as "pedagogical days". Regional and local units frequently utilize these days to provide In-Service workshops, guest speakers on innovative practices, school visitations or critical examination of a particular educational issue.

It may appear a bit off the mark to consider these types of activities as INSET activities, but this may be due to the fact that such voluntary or informal, non-credit opportunities appear to have been very little studied in terms of their impact on influencing the professional competence and knowledge of teachers. On the anecdotal level it is possible to point to individual cases where participation in this network of In-Service Education has had profound influence on the career of a teacher. But since this whole area of "informal" INSET is so diverse, diffuse and difficult to study in any systematic way, we are probably guilty of greatly underrating or neglecting the influence of this sector on teacher knowledge and behavior. All I wish to point out is that in Canada there is an astonishing amount of internal INSET activity through a variety of mechanisms. Due to the complexity of this whole area, and the lack of research attempting somehow to assess its influence on teachers, it is perhaps best to pass on immediately to the more "formal" types of University related INSET.

(2) University based INSET activities

The rational usually proposed to justify the re-training of teachers, either on a part-time or a full-time bases in the university, contains a near universal set of arguments. There is a collection of arguments describing what is inadequate in the training model of the normal school or teacher college, then there is a second collection of arguments concerning what is right with the modern university that makes it the desirable locus of INSET. These arguments may be found dispersed in a variety of Canadian documents concerning In-Service teacher education. Collecting the major arguments here, and attempting to state them in what is hopefully not an excessively simplistic form, may be of some use in examining INSET activities in different nations. It is perhaps of less importance to catalog structural differences between systems of INSET than to expose our shared foundational assumptions and beliefs in the education or re-education of teachers, at least they would be visible for discussion and for more probing analysis across structural variations.

The "Normal School Framework" of teacher education.

Within the contemporary Canadian university the basic framework used to retrain or recycle experienced teachers is fundamentally the same as the framework used for pre-service teacher training. In Canadian universities we have been very much influenced by the American practice of building university curricula on the basis of one-semester courses to which a number of credit units are assigned. Generally speaking, a student accumulates about 15 credits per semester and when a fixed number of credits have been satisfactorily completed a university degree is granted. Obviously this "arithmetization of knowledge" needs to occur within some kind of framework, if a students' program is to have some kind of coherence and internal logic and not be a mere sum of random courses. The basic framework of university course-credit organization, for a pre-service teacher or in-service teacher, remains to this day the curriculum pattern of the normal school of the late 18th century. Even if the normal school and teachers' college have moved to the university this, by itself, is no guarantee that the fundamental assumptions and curricula patterns of teacher education will necessarily be drastically changed by such a transfer. Over the last twenty five years we in Canada have experienced a phenomenon that it many ways resembles the American experience in Teacher Education between 1885 and 1905. It was in this period, in the United States, when there took place a great debate on the education of teachers, as normal schools began to expand their programs so that they increasingly began to resemble the Liberal Arts College. It was also during this period when a number of American universities, such as Chicago, Columbia, Harvard, Stanford, Michigan, Wisconsin and Illinois established Schools of Education within the university structure either as departments or professional schools. As normal schools took on the form of Liberal Arts Colleges, and universities began taking on a teacher education role, the great debate became polarized on the issue of "the art of teaching" and "the science of education". In what Paul Woodring has called "the normal school tradition" there was a key assumption:

> "The normal school tradition was based upon a clear assumption that the beginning teacher should have been taught how to teach - that he cannot be counted upon to learn the necessary skills and understandings on the job. When normal schools were first established, this view represented a sharp break with the past, for, prior to that time, it seems to have been assumed that almost any literate adult could teach children the three R's. Even today it

> differs drastically from the view of those responsible for the preparation of college teachers whose preparation rarely includes any introduction to the process of teaching. The two views have almost nothing in common".

Since the turn of the century we have seen an endless series of Symposia, Colloquia, Conferences, task forces, panels, etc. trying to find some kind of balance between "art" and "science" (practice and theory) in the teacher education curriculum inherited from the normal school tradition, that has gradually "moved-in" the university over the last seven decades.

The traditional normal school curriculum was divided into five great branches: (1) The Foundations, (Philosophy of Education, History of Education); (2) The Philosophy of Mind (later Psychology); (3) Methods of Teaching, (4) Advanced work in the subject disciplines (Mathematics, Geography, Language, etc), and (5) Practice in Teaching. It is this curriculum pattern that "moved-in" to the university structure whether "Education" was organized as a department, a faculty or a School (The Department of Education, the Faculty of Education, The School of Education). One need not read very extensively in the 20th century history of teacher education in the United States to be struck by the problems that emerged subsequent to the transfer of the normal school framework to the university. A re-examination of the American experience over the last seventy years would seem to be of considerable value today as an increasing number of industrial countries are shifting their base of teacher education to the university. In Canada, as the normal schools have been absorbed into the university structure, much of what has happened in Canadian teacher education since 1945 resembles a nostalgic re-run of the American experience at the turn of the century. While these problems cannot be discussed in any length here, still a brief indication of the major problems might be helpful to identify the present status of INSET university-based activities in Canada.

One of the most recalcitrant difficulties stemming from the integration of teacher education into universities seems to be that when the "normal school curriculum", and the basic assumptions of the normal school tradition, are forced into the mold of the modern university a host of spin-off problems emerge. A quick listing of these problems serves also as a list summarizing the great teacher education debate of the last three generations. These problems are relevant to both pre-service and In-Service education.

First, there continues to be a question in the minds of many university academics if "education" is a discipline, in the sense of the existence of a well-defined object open to scholarly inquiry. In 1892 when Teacher's College applied to Columbia University to be integrated with the university the petition was turned down on the grounds that "education is not a discipline". In the 1950's the School of Education at Yale University was closed by the president of the university on the grounds that "education is not a discipline". In Canadian universities today it is relatively easy to find university scholars who, if not scandalized by the presence of "education", at least cast a bemused eye on the pretentiousness that such a foggy domain can ever be objectified to become worthy of serious scholarly study. Over the last twenty years in Canadian universities we find, many departments of Education, (Faculties or Schools) still struggling for peer acceptence within the University academic community. This particular attitude of many university people is less visible in the case of pre-service education, particular in those teacher education programs that are designed to provide a basic liberal education followed by a year of professional study in education. However, in INSET programs,that attempt to make a significant modification in the traditional university model,one can almost always expect the emergence of tensions somewhere along the line. The two case studies to be presented here are both examples of INSET models that modify the traditional model of the university, and as will be pointed out, both innovations have had their difficulties with the local academic community.

A second classical problem of teacher education concerns the normal school framework. In the German normal schools of the late 18th century, so widely copied elsewhere in Europe and North America during the 19th century, the curriculum did possess a closely integrated internal logic, held together largely by the philosophy and ideology of German Idealism. As normal schools proliferated throughout the 19th century the erosion of the philosophical infrastructure, that held the model together, resulted in the disintegration of a formerly integrated model into a series of unconnected fragments. The "Foundations" proliferated into a whole series of "Philosophies of Education" and "Histories of Education". As Psychology split-off from philosophy, to become a respectful discipline in its own right as a human science, the psychology taught to teachers at any given period has been a reflection of the ebb and flow in the popularity of schools of psychology. Today, depending on a great many factors,the psychology taught to teachers may take the form of presenting the work of a particular psychologist such as Skinner, Bruner, Erickson or Piaget. Or, as in the case of the foundations, the psychology taught to teachers may take the form of presenting a parade of psychological schools of thought (associationism, behaviorism and neo-behaviorism, psychoanalysis, "third force" psychology, existential psychology, psychology of groups, and so on).

In the case of the methods component, this area has become so expanded and diverse that some Schools of Education offer over a hundred courses in this domain alone.

While much of the debate over the last seventy years has centered on problems associated with the lack of any unifying rationale to guide the choice of what to teach teachers in these three great areas, (foundations, psychology, methods) there has been, however, near universal consensus on the importance of practice teaching. But again, there has been endless discussion of where, when and how much practice teaching should take place.

In brief, the old normal school curriculum is now split into two great divisions: one branch consists of those parent disciplines that are part of the "Art and Science " tradition (Philosophy, History, Psychology, the discipline subjects such as mathematics, science, language, etc.), and the branch that consists of the so-called professional subjects (Curriculum and Methods of Teaching, Practice Teaching). The second great problem of debate has centered on the teacher education curriculum itself; what to teach teachers? when? how much? and by whom? how structured? This debate continues in the field of INSET and there is every indication that this debate will continue for a long time to come. The long tradition of structuring INSET programs on the "normal school framework" renders innovative attempts to create new models a frustrating process.

The third great problem of university-based teacher education also concerns a division, but this time a division in faculty structure. There continues to exist, as already pointed out, a division between professors of education and the rest of the academic community, but there is also a division with Departments of Education (or Faculties or Schools) between those who teach the "art and science" related subjects, and those who teach in those areas concentrating on practice, such as methods and supervising practice teaching.

As Canadian universities have taken over the responsibility of teacher education there has been a revisitation of the questions and problems concerning the place of teacher education within the traditions of University teaching and research. The justification for university-based teacher education repeats the same pattern of arguments found in the American teacher education literature at the turn of the century. There appear to be three fundamental maxims. First, it is held that one of the main tasks of the university is to advance the body of knowledge within the various disciplines. Therefore, it is argued, the university is ideally placed for providing the teacher with the latest advances of research. A second argument advanced centers on the concept of "preparation". In other university professional schools, for example medicine and law, the university-based training period consists of the years a student spends to acquire the basic knowledge and skills for a career of practice. The fundamental assumption here is that a career in a complex professional field can be divided into a period of preparation, followed by application of what is learned in the practice of the profession. Third, it is apparently assumed that not only are teacher preparation and practice separated in time, but they are only very weakly linked in space; that is, it is assumed one learns about teaching in the university, and then one applies what one has learned in a very different institution - the school. About the only link between the university institution and elementary and secondary schools is by the mechanism of practice teaching. In the school milieu very little responsibility for teacher education is provided by the school system, other than providing a place to try out ones teaching skills under a very limited and uneven system of supervision.

This background may appear to apply only to pre-service education of teachers, but, as stated previously, the up-grading and up-dating of teachers in university degree programs is perhaps the major INSET activity in Canada. The strategy of INSET development has been to use the motives of job security and the tying-in of salary schedules to course-credits accumulated at the university. The dominant model used has been the greatly expanded "normal school curriculum" transferred to a university setting, but it is a teacher education curriculum that is no longer based on some unifying rational. While we hear everywhere commentary on the importance of basing teacher education on research, and increasing in the courses the latest advances in "scientific knowledge", the process of teacher education itself remains one of the most under-researched areas in the entire field of education. At present the re-education and re-cycling of experienced teachers in Canadian universities is fundamentally based on 19th century maxims, that, of course, included the notion that teacher education should be carried out on the basis of contemporary research and knowledge. There is a major problem in this. The small amount of research that has been done on teacher education sheds very little light on how people actually learn to carry out their various roles as teachers. An American study conducted seventy years ago indicated that the most significant event in shaping a teacher was the first year of teaching. This probably remains true in 1976. What impact university based INSET activities can have on teachers has been questioned for decades. Perhaps the most candid answer is that we don't know. To further complicate matters, if the role of the teacher is to shift significantly in the near future, it is far from clear whether yet another revision and up-dating of the basic "normal school curriculum" presently housed in the university will be adequate to the task.

C. Selection of the Case Studies.

The two case studies selected for presentation are based on two INSET projects that have some common features. Both projects are closely related to universities, but modify to considerable extent the INSET approaches generally found within Canadian university settings. Both projects place considerable trust and confidence on the teacher's ability to plan and carry-out their own individual development based on their own learning needs as they see them. Also, both projects have been in existence for five years, a period that is sufficiently long to have enabled them to develop a certain degree of experience and maturity. Finally, both projects bear close resemblance to Research and Development strategies. In the five year period of their existence the conception at the start of the project has been considerably modified along the way on the basis of continuous self-criticism, analysis and feedback. The description of the two projects here only represents a particular point in time of their continuous evolution. Time and experience will undoubtably continue to modify these projects.

In describing the projects I have made an attempt to treat their origins, the initial conceptions, the problems encountered and the modifications made to meet problems. Whenever possible the description will be placed along a time-axis to illustrate the dynamic nature of these projects, which it must be emphasized again, are continuing to evolve.

One of the main reasons for selecting these projects here is because they strike me as interesting INSET models that are "open", "developmental" and are based on teacher needs rather than institutional needs.

Section 2.

Case Study I - PERMAMA

Background of the project

In the introductory comments I stated that one of the major areas of INSET activities concerns the up-grading and up-dating of teachers who do not hold a university degree. The first case study presented here illustrates an INSET program for a specialist group of secondary school teachers in one Canadian province. The project is a university based INSET program for Québec secondary school mathematics teachers leading to a B.A. degree in the teaching of mathematics. Québec secondary school teachers represent a specific example of a point made earlier identifying the existence of two populations of teachers. The younger mathematics teachers tend to be university graduates who have followed a rather extensive program of mathematics for two years in the CEGEPs and three years in the university specializing in mathematics. In contemporary pre-service teacher training programs considerable work is also devoted to mathematics pedagogy. However, many mathematics teachers, even those in their late twenties, received their teaching certificates prior to the extensive reforms of the late 1960's and these teachers constitute the second group now teaching in secondary schools. In contrast to the first group they do not hold university degrees.

While the existence of these two groups holds true for many subject disciplines the case of mathematics education contains a special feature. In Québec, as in other Canadian provinces, mathematics teaching has been heavily influenced by the "new" curriculum reform movement developed in Europe and the United States in the mid-1960's when the curriculum reform movement was at its peak. Many of the arguments put forth by mathematicians for curriculum reform entered into Québec by the "informal" network of INSET activies. As new mathematics curriculum materials from Europe and the United States gradually entered Canada, it soon became obvious that many mathematics teachers had great difficulty in teaching, or even understanding, these materials due to their own insufficient mathematical background. Teachers found it necessary to up-date their knowledge through workshops, evening or summer courses. For those in urban areas, near universities, they were able to take advantage of a variety of In-Service opportunities. But for teachers in the non-urban areas, or for teachers who must work during the summer, the generally available type of INSET in mathematics education could not serve them very well.

In a collaborative enterprise between the Québec Ministry of Education and the University of Québec a new INSET project was created in September 1971 specifically designed to up-grade and up-date mathematics secondary school teachers across the province. The project was designed to enable teachers to enroll in a program of university studies leading to a degree, while remaining on-the-job at their local level. This necessitated designing an INSET model that would cover, as much as possible, the vast territory of the province. The project is entitled "Perfectionnement des Maîtres en Mathématiques", and is usually referred to by the acronym PERMAMA. The first course of the project was given in February 1972 enrolling some 1700 students.

The initial PERMAMA model

Since PERMAMA is an In-Service program leading to a university degree, the general administrative structures were designed to conform both to the general regulations for higher education of the Ministry of Education and to the general regulations of the University of Québec that hold for the different branch campuses. It is perhaps useful to enter into some of the administrative detail of the project to explain the initial model, and to help in understanding why at a later time the model was rather extensively revised.

As in the majority of North American universities, the University of Québec uses the point credit system in its curricula designs. Normally three credits are assigned to a one semester course. In the case of certain seminars, practica, laboratory or thesis work multiples of three may be allotted. The general requirement for the first university degree in Québec universities is 90 credits, which conveniently translates in 30 "courses".

The PERMAMA model conforms to these administrative norms. Since students in the program are all experienced teachers, who have already done some teacher training work, a student is given 30 credits of equivalences at the start for studies completed in previous diplomas. There remains 60 credits to complete for the degree. In the initial design the program consisted of 20 "courses" that a student could take over a period of several years. In this model the program design conforms to the general North American administrative pattern of universities.

At the outset the basic purpose of PERMAMA was to up-grade and up-date the teacher's knowledge of mathematics. In designing each of the courses it was the intention to integrate the methods of teaching and the mathematics content. One course dealt with didactics, but the other 19 courses were in mathematics itself (e.g., linear algebra, mathematical logic, transformational geometry, introduction to algebraic structures, etc.). In the initial model all twenty courses were obligatory. Courses were developed by writing teams composed of mathematicians from various branch campuses of the university following a production time-table covering several years as students advanced in the program. By September 1975 eleven courses had been produced.

The first course, dealing with mathematics topics in the secondary school program, was started in February 1972 with an enrollment of over 1,700 students dispersed throughout the province. Each course consisted of a package of materials for students, a series of TV tapes, and evaluation materials. Seventy centers were created to cover as much as possible the province. Students from a given region met once a week for a three hour session at the local center under the guidance of a group leader (moniteur-animateur), and put in an additional six hours at home or in informal subgroup meetings.

Each of the 70 group leaders is responsible for the organization of the local center and for distribution of materials. But their main function is in providing for the well-being of the local group through leading discussions, supervising the work of students, supervising examinations, operating the television equipement and providing feedback to the course team. (Daniel and Umbriaco, p. 10). These group leaders are not academic specialists, but have similiar backgrounds to the students. Daniel and Umbriaco describe the group leaders as follows:

> "One third are in fact enrolled in PERMAMA themselves and few of the remainder hold a qualification beyond a first degree. Despite warnings from the course team, we know that in the early days of PERMAMA several 'moniteurs-animateurs' tried to cast themselves in the role of instructors and to 'teach' the courses. These attempts failed and over the last three years nearly all the 'moniteurs-animateurs' have become proficient at using the resources of the group to solve problems. Not surprisingly, we find that the better qualified ones are able to give more help with subject-matter problems, but those who are themselves taking the course are, in general, most successful at organizing group work and discussions.
>
> "All 'moniteurs-animateurs' are paid an honorarium of $600 per three credit course and briefing and training sessions are held one or twice a year. These residential sessions are held at conference centers near Québec City and are attended by all 'moniteurs-animateurs' and the course teams for the next courses in the PERMAMA programme".

The initial model can characterized as containing the following elements:

1. A centralized planning, evaluation and development team.
2. A uniform program of 20 courses integrating methods and content produced by different writing teams.
3. A network of 70 regional centers each under the tutelage of a "moniteur-animateur" who may himself by enrolled in the program.
4. A series of university "consellors" to serve as regional consultants.

A significant event in the evolution of PERMAMA was the creation in October 1972 of the Tele-university as a branch of the University of Québec. In June 1973 PERMAMA became attached to Tele-university as one of the official projects of this new organization.

The initial INSET model of PERMAMA, put into operation in February 1972, received a number of criticisms by October - December of the same year. Without entering into excessive detail here there appears to have been three major types of problems: (1) students had considerable difficulty in relating the work done in the PERMAMA courses to their own classroom teaching; (2) the work-load of the courses seemed to be very taxing to teachers who continued to teach full-time; and (3) there were operational problems in the role of the counsellors and center leaders.

By January 1974, two years after the initial start, the number of problems seemed to have multiplied to a point where there was general consensus that the PERMAMA model had to be rethought and redesigned. One particularly worrisome fact was the very high drop-out rate of students. For our purposes here it is important to note that while the initial PERMAMA model contained some innovative aspects of INSET, the basic model was still pretty much rooted in the traditional mode of higher education models. The courses were so highly structured in a package form that little experimentation or variation was possible once the course had been produced. Further, the highly linear design from one course to another left little room for the students to choose areas in which they were particularly interested or felt they needed help for their own development. Finally, the classical problem that has plagued teacher education for decades emerged once again, namely - the whole problem of the relation between theoretical knowledge and classroom practice.

In March 1974 the PERMAMA team presented a general review of PERMAMA to the Tele-university. This report is remarkable for its searching self-analysis and for the candor in presenting its review of past years and future intentions. An introductory commentary of the committee reflects the spirit of the self-critique:

> "PERMAMA is not simply a machine to produce holders of a bachelors degree. PERMAMA has a social role to play: to offer to secondary school mathematics teachers an education that will enable them to transform their teaching.
>
> "Reforming the teaching of mathematics is an essential social task when we note that the vast majority of the population leaves school with a distaste for mathematics, perhaps because all we teach is the art of conforming to the good methods, to correct definitions, and to good theorems infallibly proven in the correct order.
>
> "We prepare for the society of tomorrow, and to prepare students to a point where he can develop autonomously, is it not therefore necessary that the teacher himself learn to be autonomous, to become open and confident in regard to mathematics and his own teaching?

> "PERMAMA should help create competencies in terms of teaching teams, who have acquired the attitudes and the necessary resources to continue their own development and improve their own teaching.
>
> PERMAMA should also provide to these teams teaching materials and elements of methods they can use in their teaching.
>
> "To accomplish this PERMAMA cannot resemble the traditional program for a bachelors degree. It is necessary to keep in mind both the weak background in mathematics of the students enrolled in PERMAMA and to start from where they are in their experience and their needs as teachers".

In addition, the committee identified the following criticisms of the initial model: the high drop-out rate of students, the inappropriate content, the linearity of the program, the dissatisfaction of the students, and the lack of impact on classroom practice.

On a more positive note the committee recommended redesigning of the model keeping in consideration the following points:

1. To attenuate as much as possible the linearity of the program and change the prerequisites to courses to provide more openness and flexability.

2. To modify the program in view of the realities of the student in order to have an impact on classroom teaching.

3. To put the emphasis on changing the attitudes of teachers toward the process of teaching rather than emphasizing the acquisition of mathematics knowledge.

4. To increasing the relation between the courses of PERMAMA and the mathematics program in use in secondary schools.

5. To put greater emphasis on problems of epistemology and the learning of mathematics.

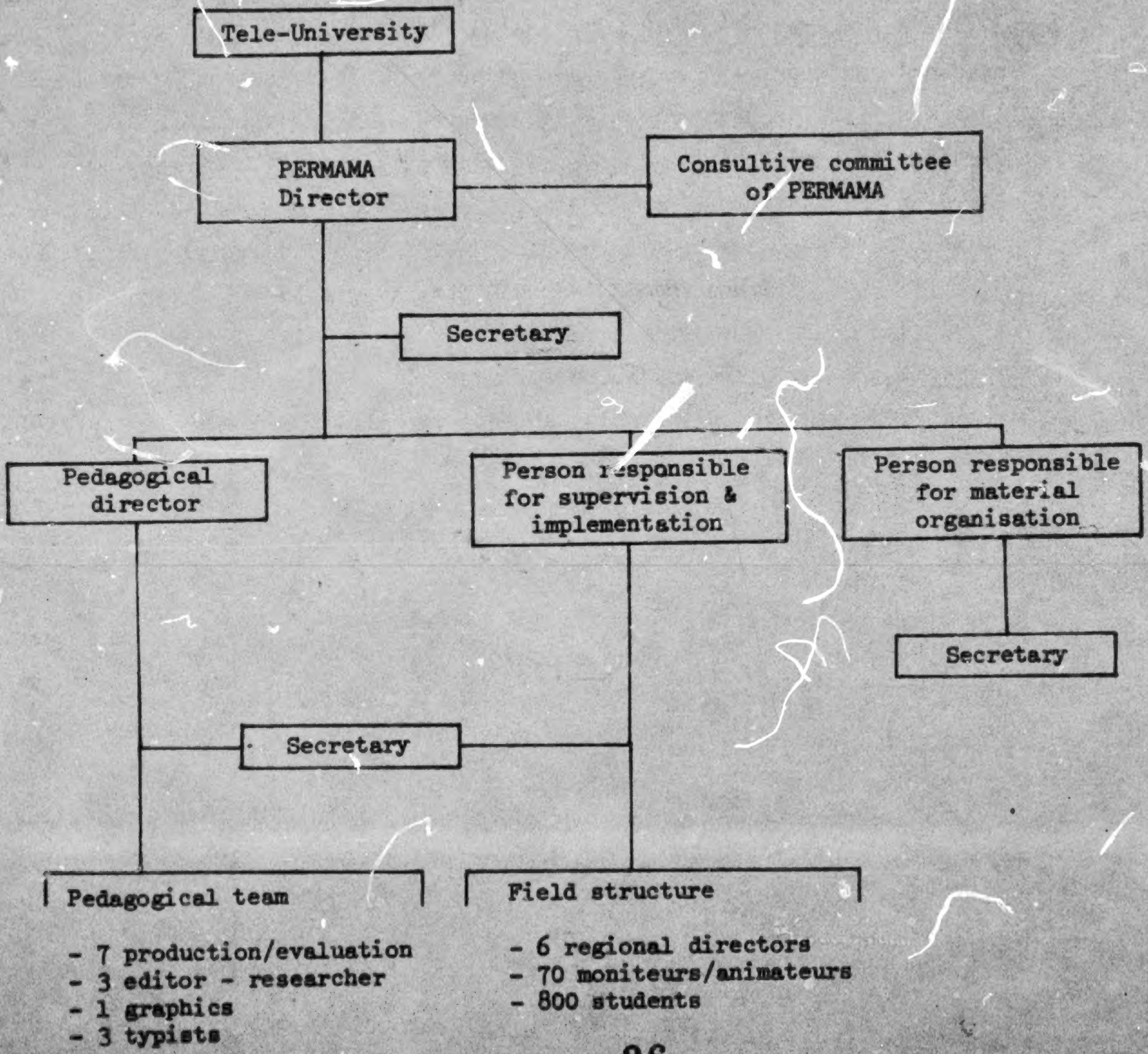
6. To orient the mathematics content of PERMAMA as a function of their utility in concrete problems.

This list of intentions and objectives became the guiding principles for the creation of a revised INSET model proposed one year later (March 1975) and is presently (1976) the basis of operation.

The revised PERMAMA model of INSET

The revisions adopted in the new model are based on a number of studies analyzing the results of an extensive questionnaire submitted to students enrolled in the initial model. These studies were conducted to determine the students perception of their own needs as mathematics teachers. An analysis was also made of the administrative structure of the program, the role of the "animateurs-moniteurs" and the mode of producing learning materials for the PERMAMA courses.

For the administrative structure there was a reorganization of roles and responsibilities. The organizational chart proposed is illustrated below.


Tele-University
PERMAMA Director
Consultive committee of PERMAMA
Secretary
Pedagogical director
Person responsible for supervision & implementation
Person responsible for material organisation
Secretary
Secretary
Pedagogical team
- 7 production/evaluation
- 3 editor - researcher
- 1 graphics
- 3 typists
Field structure
- 6 regional directors
- 70 moniteurs/animateurs
- 800 students

To respond to the criticism that the 20 courses in the original model were too linear and badly adapted to the needs of teachers an extensive revision of the program was undertaken. In the original model of 20 obligatory courses for all students, each course represented 140 hours of work over a 12 week period, which conforms to the standard definition of "course" in the university. In the new model the 3 credit "course" concept was replaced by a smaller unit, the "module" that is defined as 45 hours of work, usually covering a period of 4 weeks. It was not the intention to merely split-up a 3 credit "course" into 3 "modules" of one credit each. Rather the use of modules was a means to greatly modify and diversify the program to respond to the weaknesses of the initial model as indicated by the staff and student critiques. Also the module unit permitted a great deal more flexibility in student choice and in the construction of various types of educational activities other than the acquisition of subject-matter knowledge in mathematics. Before describing in greater detail the new model a preliminary remark needs to be made on the conceptual foundations of the new INSET model that was created.

In rebuilding PERMAMA the project staff contrasted two conceptions of school learning. In the traditional conception of school learning the "school system", through its pedagogical, curricular and administrative structures selects a certain sample of the known from the universe of knowledge. The teacher functions as an intermediary between the student and the universe of knowledge (as filtered by the school system). The relation between these four elements (universe of knowledge, school system, teacher, student) in the traditional concept is linear and unidirectional. In this context the teacher is the principle agent of the "transmission of knowledge", while the students' role is conceived in terms of the receptor of knowledge. The initial PERMAMA model, despite structural variations, was still basically founded on this traditional conception. Furthermore, it may be safe to assume that this conception is still the dominant conception of the majority of university academics.

In contrast the PERMAMA staff proposed another conception of learning in which the key idea is that learning is a dynamic interactional process of exchanges between the learner and his environment where the learner is the central and active element. The learner is the principle agent in his formation and this takes its source in the interior dynamics of the learner. In this conception the chief agent is not the teacher, as the transmitter of knowledge, but the learner as a constructor of knowledge.

The PERMAMA staff has greatly elaborated on this conception of learning. Such a conception is, of course, not new, in fact the idea of the "knowing-subject" as a constructor of knowledge is a fundamental notion in Piaget's genetic epistemology. Nor is the notion new to those familiar with the informal approaches of many British Infant and Junior schools, or to those familiar with American "Open Education". While the application of this idea to childrens' learning has been much discussed it is rather refreshing to find in the PERMAMA proposals the same idea extended to adults, and - in all places - to In-service Education! But this extension to adults will hardly be a surprise either to those interested in certain type Teachers' Centers where this idea is often part of the implicit or explicit rationale. The PERMAMA staff has choosen to make explicit this conceptual foundation of the revised model rather than to keep it implicit. It must be appreciated that many who propose INSET models have a tendency to keep their foundational conceptions hidden from view while elaborating a structural superstructure in considerable detail. Many of the major problems of INSET activities appear to be not so much at the structural level, but rather at the conceptual foundations expressed either as "philosophies" or "ideologies".

In exposing their conception of learning and knowledge the PERMAMA staff have taken a certain degree of risk within the academic community for this is not the conception that reigns. This conception pushed further necessitates, to maintain logical consistency, a reconceptualization of the role of the teacher and the role of the student. Pushed further still the whole structure and function of school systems in modern societies needs to be re-examined at the very least in terms of pedagogy, curriculum and administrative apparatus. The PERMAMA model is addressed to a limited audience of secondary school mathematics teachers, but its revised underlying conceptual foundations are far from limited to within these boundries.

The PERMAMA staff in rebuilding the model has been much influenced by a document published by the Québec Superior Council of Education as part of its annual report in 1969-70. The document written by the Quebec educator Pierre Angers, entitled "L'Activité Educative", has influenced a number of Quebec educators interested in educational change. Angers has analyzed the traditional conceptions of learning in considerable detail labeling this as the "mechanistic" conception. He has also analyzed, as the "organic" conception, a series of ideas that are at the foundations of much educational innovation in many parts of the world. In this sense the revised PERMAMA is an INSET model inspired from a growing view-point on the nature of the educational process.

The new PERMAMA has set-out, as a fundamental objective of the project, to attempt to change the conceptions mathematics teachers hold of the educational process. This is a far more ambitious and difficult undertaking than up-grading and up-dating the teachers skills and knowledge of mathematics teaching based on traditional conceptions of the educational process, which was the fundamental objective of the initial model.

The revised PERMAMA model

The staff describes the principle characteristics of the revised model as follows:

1. Continuous In-service.

   In contrast to most In-service programs, in the model proposed the student may continue to participate as long as he feels that his professional needs are being served, and this may continue after he has received his diploma.

2. Closely tied-in to the teachers' professional function.

   The learning activity of the PERMAMA student should be centered on his professional tasks on the job, rather than on a content judged to be indespensible by the In-service planner.

3. Self-Learning within a team approach.

Self-learning rests on three elements:

(a) The central element is the work of a team of students that substitutes the uni-directional teacher-learner relation by multi-directional relations between their members.

(b) Certain activities are carried out by means of auto-instructional materials prepared by the central staff.

(c) Other activities are completely determined and elaborated by the learners. The central PERMAMA group (staff) furnishes counselors to facilitate their work.

4. Personnalized directions defined in collegiality.

The sequence of pedagogical activities are determined by the PERMAMA students themselves as a function of their needs in collaboration with the central staff.

The revised model maintains many administrative and structural aspects of the initial model. The PERMAMA students continue to function within the 70 centers under the guidance of a leader. Within a center the students can form different learning teams over the course of a year, such teams being formed on the basis of interests, common needs, previous knowledge or professional roles. Some activities are carried out alone, while others may require three or four persons, or they may involve all the members of a center.

The number of pedagogical methods have been greatly extended and may include lectures, discussions, group work, the design and experimentation of learning materials, writing of research reports, projects and so on. All these means try to maximize the relation of mathematics content and teaching methods to be transferable to the classroom.

In the adoption of a modular approach three types of modules now exist in PERMAMA: management modules, intervention modules and content modules.

It can easily be envisioned that 800 students in 70 centers spread-out through the province can be a managerial nightmare. But when students are given wide choice of learning activities from which to choose, and even create their own activities in teams, then the task of keeping track of student progress is made even more complex. An ingenious "management package" has been created to enable the staff to keep track of who is doing what at any given time. Each student is required, each year, to take a "management module" which in essence is a technique of planning his work over the year and reporting on his progress. One credit is allotted to this module each year.

"Intervention modules" refer to those activities that bear directly on the students professional tasks as a teacher. These may be activities that bear on a problem of mathematics learning in high school, the implementation of a new area of mathematics, the use of a teaching method, individualizing learning, the motivation of students, the means of evaluation, and many others.

"Content modules" regroup those activities where the student uses multi-media materials that focus specifically on the teaching/learning of mathematics. The content modules are divided into three sub-categories:

M modules: that deal with a topic or branch of mathematics knowledge.

AM modules: that focus on student learning of mathematics (AM = activité mathématique).

EM modules: that focus on teaching mathematics (EM = enseignement mathématique).

In schematic form the PERMAMA staff envisions the structure/function of the model as represented by Figure 2.

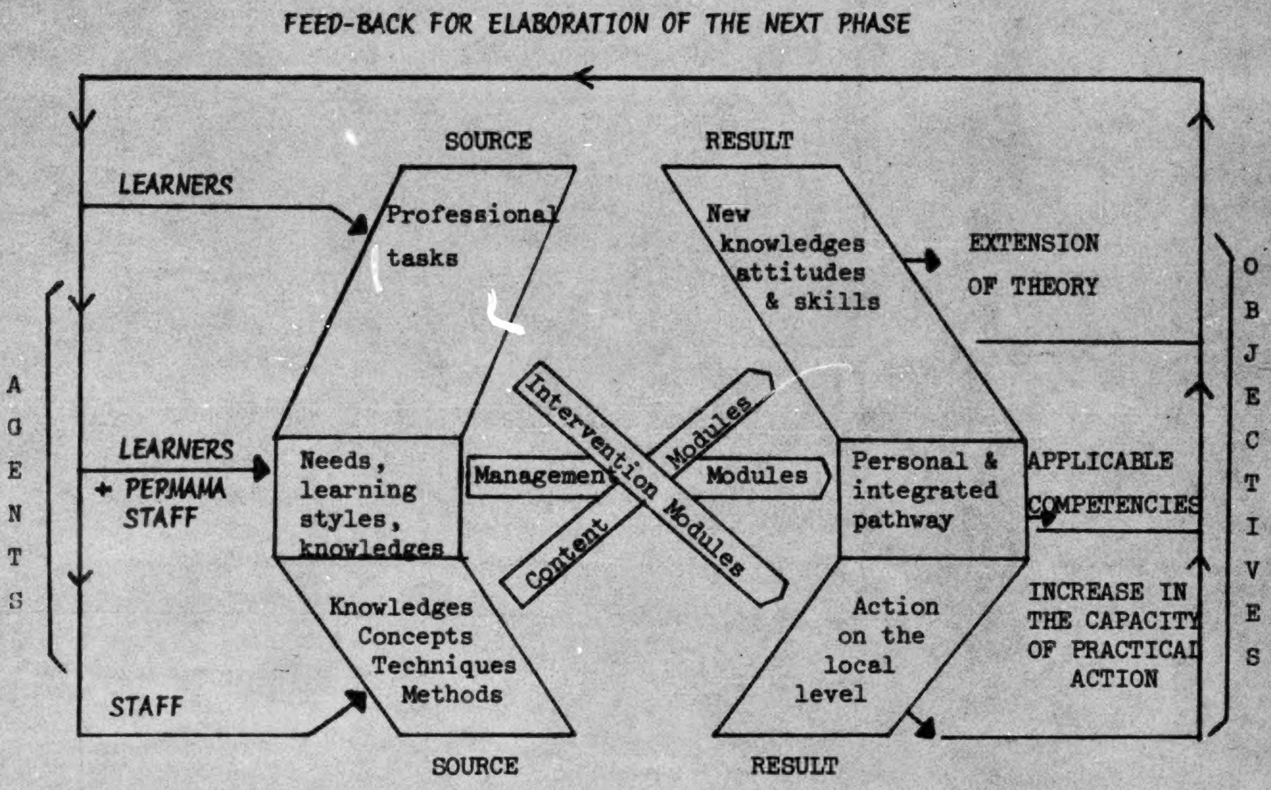

FEED-BACK FOR ELABORATION OF THE NEXT PHASE
SOURCE
RESULT
LEARNERS
Professional tasks
New knowledges attitudes & skills
EXTENSION OF THEORY
AGENTS
LEARNERS + PERMAMA STAFF
Needs, learning styles, knowledges
Management Modules
Intervention Modules
Content Modules
Personal & integrated pathway
APPLICABLE COMPETENCIES
OBJECTIVES
STAFF
Knowledges Concepts Techniques Methods
Action on the local level
INCREASE IN THE CAPACITY OF PRACTICAL ACTION
SOURCE
RESULT

Fig. 2

The three types of modules (managerial, intervention, content) constitute the basic structural framework of the program. The intervention modules are in the form of projects that may be undertaken by a student or a group of students, and the modular system allows great flexibility. Small term projects may be completed by one module (assigned one credit) or by up to six modules (six credits). The content modules (of three sub-types) are designed by the pedagogical team of the central PERMAMA staff. In the initial model the "courses" were designed by part-time ad hoc teams of university professors, but in the new design a permanent "pedagogical team" has been created to prepare the content modules. Particular content modules may also be created by consultants or invited members. A description of these content modules will not be given here since this would involve a rather long discussion of contemporary mathematics in order to explain how and why the content modules have been selected and designed, and how they can be integrated into a variety of patterns.

In the revised PERMAMA a student may choose either to take 90 credits of modules for the B.A. degree, or 30 credits of modules for a certificate. As in the original model, most students can receive 30 credits of equivalencies for their previous work for a teaching licence. For students who do not have equivalencies required for certification the courses in Education at the various branch campuses of the University of Québec can be taken in the summer or in the evening and credited within PERMAMA. Normally this would constitute about 10 regular university courses.

PERMAMA as an INSET model

In contrast to the more traditional means of INSET in the Province of Québec, the revised PERMAMA model provides great flexability of choice by the students. Rather elaborate evaluation techniques are used to assess the various elements of the model, and based on the information received a constant revision and improvement can be undertaken. This feedback is invaluable in evaluating and modifying the various modules. The entire model seems to be an "open model" that can be modified on the basis of experience and student feed-back.

Because PERMAMA is also a learning-at-a-distance model it bears some resemblance to Open University or University Without Walls. There is no doubt that these served as an inspiration to PERMAMA, and later to Tele-university. Tele-university is presently one of ten units making-up the University of Québec. However, Tele-university may not build-up a permanent staff, and this has some advantages and disadvantages. For PERMAMA, which is one of three projects of Tele-university, there is a certain degree of insecurity among the staff since the personnel are usually on loan from some other unit of the university. This enables flexible use of existing staff, but appears to have some negative psychological impact since no one can be sure when they may be recalled by their parent unit.

It would be less than candid to end this brief discription of

PERMAMA without mention of troubles and problems. The change from the initial model to the revised model was essentially an event internal to the project based largely on an internal critique of staff and students. But there was also considerable external criticism that merely reinforced what was already being said by those within the project. Recently two of the branch campuses of the university have withdrawn their participation in PERMAMA. Such events are very difficult for an outsider like myself to analyze and assess. There is some weak evidence to suggest that some members of branch campuses feel that since the transfer of the project to Tele-university they have been excluded from the decision-making process. Others feel that the revised model is too ambitious. Others feel the project has become "an immense laboratory of philosophical, epistemological and sociological experiences. We doubt that this type of program corresponds to the needs and interests of secondary school teachers. In general, teachers need to have a better understanding of what they teach, rather than to nourish themselves with philosophical considerations, even if these are very interesting in their own right". Since these criticisms of the revised model are of very recent origin it would be unwise on my part to push this too far.

In my opinion, PERMAMA after four years of existence, seems to be a project that continues to evolve, and the current criticisms may hopefully have an impact on being constructive towards further evolution. Since the revision of the model the drop-out rate has become very low and the number of students have increased from about 800 to 1000. During the week of June 7, 1976 the board of governors of the university voted not to admit anymore new students to PERMAMA. Once again, at this writing it is very difficult to dig-out what is behind this decision. One of the factors may be cost. Since the province is experiencing a variety of economic pressures long-term financing could easily have been a major consideration. The projected costs for the years 1975-76, 1976-77 and 1977-78 may interest the reader and are given below.

ESTIMATES OF PRINCIPLE COSTS

	1975-76	1976-77	1977-78
1. Salaries	$1,042,500.	$1,252,200.	$1,356,300.
2. Rents	103,900.	114,300.	125,700.
3. Library, documents	15,600.	24,350.	25,450.
4. Furniture	50,000.	—	—
5. Computer services	15,000.	25,000.	35,000.
6. Content modules			
a. Conception	51,300.	49,300.	38,400.
b. Production	461,700.	455,600.	353,400.
c. Revision of courses	27,000.	27,000.	81,000.
7. Implementation	87,000.	94,000.	120,000.
8. Supervision	52,750.	57,500.	60,000.
9. Publicity	15,000.	9,000.	7,500.
TOTALS	$1,921,750.	$2,108,250.	$2,202,750.

Regardless of what may be at the source of the current troubles (costs, internal academic politics, threats to the status quo, shift in the conceptual foundations, etc.), the model appears to present some interesting features and foundational concepts that could be extended and applied in other contexts and subject domains.

PERMAMA illustrates a case where an innovative INSET model is created within a university setting. Only the future will tell whether the PERMAMA model will be nourished and sustained by its parent institution or not.

The second case study concerns the creation of a new interprovince institution that introduces INSET innovations by collaborative attempts with schools, school systems, universities, and a variety of persons and organizations.

Section 3.

Case Study II - The Atlantic Institute of Education (AIE), Halifax

Origins of AIE

Pre-service teacher education in the Atlantic provinces followed for many years the general North American patterns of normal schools, teachers' colleges and universities. Presently there exists only one Teachers'College (in the province of Nova Scotia) and most teacher education falls within the responsibilities of the Atlantic universities.

In Nova Scotia, teacher education has received considerable study over the last one hundred years. One of the more extensive studies ever conducted in the province was published in 1950 (The Phillips report) proposing a number of recommendations for teacher education, including a recommendation for the continuing education of experienced techers to enable them to study for university degrees. None of the recommendations seem to have made much headway until 1956 when a proposal was put forth to found an Institute of Education serving all the Atlantic provinces. Anderson and Lauwerys state:

> "The idea aroused much interest. Though several forms of institute were considered, ultimately the idea was to establish one that would have a minimal superstructure and that would aim at coordinating and developing the resources of all participating institutions, as well as undertaking several other functions on its own. The Institute was established in 1969, and began formal operation in 1970."

The institute founded, the Atlantic Institute of Education, is located in Halifax, Nova Scotia, and although it is designed as a collaborative effort of all four provinces, at present the major source of funding, and the

the major work, is within the province of Nova Scotia.

Two of its initial projects were the development of programs for counsellor education and special education. The counsellor program plan was designed to enable several universities, each with limited numbers of students and staff in counsellor education, to collaborate so that students could study in four different university settings and in several schools and clinics. After two years of planning "what looked like agreement in the spring of 1972 had deteriorated to chaos by August" (Anderson & Lauwerys). The cooperative program failed to materialize. A concurrent effort in special education was developed in 1970-71. Although several universities offered courses in special education none had establised programs in special education. AIE created a postgraduate B.Ed. program consisting of 14 courses over a full 12 month period of study. Existing courses in three universities were incorporated into the program. Anderson and Lauwerys describe some of the problems of this first program that started in September 1971 with 13 students:

> "There were a number of problems with that type of operation. The intent was to develop an experimental program that could be responsive to student needs and to experience gained as the program developed. But the involvement of universities made it practically impossible to alter the structure of their part of the program once it was under way. Specifically, course scheduling in the universities could not be altered. Other difficulties included the practice of mixing the 13 special education students with the large numbers pursuing a general course in the university. The small special education group had somewhat different needs than the average university B. Ed. student and the work covered did not always integrate well with the work done directly with AIE. A multiplicity of financial and administrative problems also developed across institutions. A major finding was that the extensive core curriculum developed and conducted at AIE made the work pursued in the other three settings seem unrelated and in the students' view, therefore, of somewhat questionable merit. It was also difficult to insure that staff from all institutions shared equally in the program development and were able to learn fully from the joint experience. The combination of these factors

> led to the alteration of the program in the second year so that the Institute directly conducted all courses with the exception of one university course that had previously integrated very well into the whole."

In the second year of the program AIE offered to turn over the program to the university, and the cooperating universities decided to adopt the program in Acadia University, one of the three institutions that had participated in the program. This offer to turn over the program is "consistent with its (AIE) philosophy of providing the initial research and development for programs that could later be run by the universities on an ongoing basis." This is an aspect of AIE that gives the institute a quite unique role.

> "AIE has recognized a need for institutional adaptation in the Atlantic region and had felt that by showing the universities alternatives that they themselves would find difficult to implement and by demonstrating the effectiveness of such alternatives, some institutional changes might result. Although the alteration in university structures using this method is by nature slow, any attempt to change university structure must come by working within its framework and adapting it a little at a time. The only alternative would be a result of an extreme crisis in education, which necessitates rather sweeping departures from existing university practices." (Anderson and Lauwerys)

In their 1973 paper, Anderson and Lauwerys suggest a plausible approach to introducing change in teacher education by focusing on the needs of teachers that "would relate specifically to enabling teachers to perform better in the classroom." The identification of teacher needs would be based on the general principle that where a teacher is at a given point in time should be the place of departure in planning an intervention plan. In-Service education would then be a means for helping the teacher to develop further. A second step, after the identification of needs, would be the identification of deployable resources in terms of persons and facilities available to meet needs. "Thus a university course would be a deployable resource only if a given teacher was able, in terms of such factors as admissions criteria and location and time of the course, to enrol in it. Human resources and facilities would similarly be listed only if teachers could conceivably have access to them."

A third aspect would be the creation of structural mechanisms to match the available resources to the real needs of teachers.

> "These structural mechanisms could involve new programs incorporating such concepts as independant study on an extension basis. They might provide for the movement of people or of materials. This is essentially the approach used by AIE in the areas of special education and counsellor education. The difficulty in counsellor education was that agreement could not be reached regarding a structural mechanism that would satisfy the parties concerned and that would at the same time fulfill the requirement of making the resources available to the students. The structural mechanism used in special education was much simpler and was accepted by mutual agreement, hence, a change in the structure of teacher education in this field did occur. There is clearly need for additional exploration of various structural mechanisms and for testing out their suitability in the NovaScotia context."

The identification of teacher needs and resources, and the creation of new structural mechanisms to facilitate the realization of plans, is a strategy that differs considerably from traditional INSET in Canada. The two programs planned in the early days of AIE, in counsellor education and special education, resemble in many aspects the development of consortia to share limited resources among different institutions. If AIE had simply limited itself to this type of development it perhaps would not differ very much from a number of similar consortia examples in various parts of North America. However, a third project, the Lighthouse Learning Program, also created in September 1971, was to have a dramatic impact on the future of AIE. In the five year report of AIE it is stated:

> "The Lighthouse Learning Program over the past four years has developed approaches to education which now pervade most major activities of the Atlantic Institute of Education. The Lighthouse approach has become synonymous with the process of identifying, developing and reporting what has been learned about educational innovation and change in the Atlantic region. In this sense, the term Lighthouse was adopted to indicate our belief that beacons of educational excellence existed in the Atlantic Provinces from which others could learn." (Times Five)

Consistent with the strategy of basing intervention on teacher needs discussions were held in 1971 with numerous educational leaders in the Atlantic region to help in the identification of teacher needs and to formulate a plan. In the spring of 1971 a proposal was made to establish the Lighthouse School Project. The objectives of this Project were:

1. To identify at least one outstanding school in each of the four Atlantic provinces.
2. To develop the human and material resources within each designated school in order to provide more completely for the education of children within the school.
3. To develop and make available within these schools mechanisms for the in-service and pre-servicing of teachers.
4. To disseminate throughout the region information on innovations within the schools and in education generally.
5. To demonstrate the potential for the improvement of education within the region through cooperation and utilization of the mechanisms of the Atlantic Institute of Education.

The proposal was accepted by the Board of Governors of AIE, and the Donner Canadian Foundation provided a three year grant of $158,000.oo (later spread over a four year period).

Work began in September 1971 with two staff members operating on the basis of the five general objectives. Rather than limiting themselves to the traditional concept of "schooling" the staff enlarged the notion to "learning", wherever it takes place. Rather than trying to create a model school that others could imitate, a strategy that rarely works, the staff:

> "decided to find ways in which learning resources were already being used, and to intrude in any ways we could, to build on these efforts, strengthening them, letting others know about them, and helping others to see how they might do something similar in their own situations." (Cassivi)

The name of the project was changed from "The Lighthouse School Project", to "Lighthouse Learning Project" to reflect its new focus of concern. AIE, rather than being a source of university-type In-Service courses, was to serve in the identification and dissemination of information on educational initiatives in the four Atlantic provinces.

> "We might... explain the meaning that we attached to the word initiative. We considered it the utilization of some local resource (person, place, thing) which would enhance the quality of education in the area, and as well, open up doors for the development of potentially excellent resources. We were in fact looking at such things as: the encouragement of the existing resourcefulness and initiatives of children; the use of a teacher's special interests and abilities; the reflection of the broader view of the school beyond that of simply fulfilling the requirements of the syllabus; teaching for understanding rather than recitation; ensuring that what happens in school affects children outside school hours; the involvement of parents and the community in the school; and the provision of alternatives for learners with different interests and abilities." (Cassivi)

During the four year period of the project a very large number of activities were accomplished in the work with teachers and other school people. Some of the activities will be identified here, but no detail description will be given.

Some of the Activities of the Lighthouse Learning Project: 1971-1975

1. Workshops.

One of the purposes of the project was to support initiatives, and this meant identifying in the Atlantic provinces the initiatives and the people involved. As the staff travelled and met people meetings were arranged among teachers who had similar interests, and an informal network of people began to develop. It was found that many people who worked in isolation had similar ideas and interests, and this led ultimately to the idea of founding a Teachers'Center in the Atlantic provinces. Many of the meetings were informal exchanges between teachers and staff, and these in turn sometimes evolved to the creation of workshops.

> "The workshops generated considerable discussion among us about how we should be working with teachers. We decided that we would initiate and/or respond to requests for workshops in those instances where teachers were voluntarily participating; where there was assurance of follow-up either through further meetings or letters; and where there was a possibility of a multiplying effect, with participants being able to involve others in similar activities. We tried to avoid one-shot inservice sessions; it became apparent that these were not appropriate because they did little more than raise interest and certainly could not be expected to alter teacher behavior in any significant way." (Cassivi)

Short term workshops were conducted on such topics as "Piagetian Tasks with Children," "Art on a Shoestring Budget," and "Reading in the Open Classroom." In 1972 and 1973 there were longer-termed workshops, meeting weekly over three months, on Mathematics and on Open Education. Weekend workshops were conducted over a wide geographical region and these also proved to be of great interest to teachers.

2. Teacher Exchanges.

The Lighthouse staff also attempted to respond to initiatives through teacher exchanges as another technique of INSET. Very often a school or a school district would request a workshop informing the AIE staff of the number of teachers involved and listing their interests that might vary from a few teachers requesting work in drama or another few requesting work in physics. The AIE would respond by arranging teacher visits to individual places where interesting work was being done in the area of their choice, or would contact museums, universities, "or whatever place would best meet the needs of these teachers." (Cassivi) If visits were in the Halifax area, the visiting teachers were required to come to spend the last few hours at AIE to discuss what they had learned during the visits. Also each school or district was required to provide a report describing what was useful, and not so useful, in their visits.

3. Printed Materials.

Part of the Lighthouse mandate was to provide support for teachers and to disseminate information on the work teachers were doing. The staff produced copies of interesting articles that could be sent to teachers requesting help. The staff also began to develop some of their own written materials on such areas as resources in the Halifax area for the teaching of physics, lists of places for classroom visits and materials in mathematics learning.

4. Packages.

In the fall of 1972 packages of materials were produced containing information on what people were doing, along with copies of their work. Packages were sent about every two months to teachers in communication with the project. This made possible additional contacts and to maintain teachers in contact with one another. However, these packages were limited to 280 to 300 people and the staff felt they were tending to develop an elitest club atmosphere. "...We tended to maintain contact with those who shared similar philosophies to the exclusion of many who, while needing support, may not have shared the views of the 'type' of person that we had originally contacted." (Cassivi)

5. The Lighthouse Journal.

Because of the problems involved in sending out packages, a new journal was created for the dissemination of information, The Lighthouse Journal. The first issue was sent to about 1,300 people, and the final issue under the program was sent to 4,200 people, "making it the largest circulated educational journal in Canada. "(Cassivi) As publication policy the journal contained material that would be of interest to teachers, in what teachers and children had actually done rather than theoretical or conjectural articles. Stress was placed on the unique features of Atlantic Education -its environment, its history, the concerns of people.

The five above activities were means to reach teachers over a large area. Field workers in each of the four Atlantic provinces were also provided, but this involved considerable travel. In the difficult winter months from December to March, travel in this region of Canada is frequently extremely difficult. Attempts were also made to develop structures within local communities to provide for the continuing education of teachers.

> "In doing this, the Lighthouse Program was essentially redefining the notion of what a teacher and learner is. We did not base it on any academic qualifications. We simply felt that people can learn from other people and that teachers, therefore, can learn from other teachers or indeed from anyone within the community." (Cassivi)

The Lighthouse Learning Program came to an end in August 1975, as did the external funding provided from the Donner Canadian Foundation. From the experience gained over four years there developed the Lighthouse Centre for the Development of Learning Resources. Unlike the manner in which most learning resources are developed, in splendid isolation from teachers, schools and children, the Center is particularly interested in developing resources that reflect the teachers' and childrens' interests, concerns and aspirations. The Center is the second phase of the project continuing on the general principles of the Lighthouse Learning Program. Particular areas of concern are Teachers' Centers, Outdoor Education, Local Studies, Curriculum Development, providing information, publications, and the Open Access Study Plan (to be described shortly). AIE was the catalyst in establishing a Teachers'Center, the Little Ted School House, in Prince Edward Island, but this center was planned and built by teachers and is under control of teachers.

The activities identified above do not exhaust the activities of the Atlantic Institute of Education. At present staff members in collaboration with teachers and different consultive groups are developing a resource curriculum unit on the Atlantic Salmon; a series of reference booklets are being published to help teachers. One booklet identifies Canadian books for use by teachers and children; another is concerned with the planning of local studies approaches. One booklet suggests to teachers a variety of activities to help children better understand hospitals. Since many children are hospitalized at sometime during their childhood the better of understanding of these institutions by children can help them in alieviating the mysteries, and frequently the terror, children have of hospitals.

The Atlantic Institute of Education bears certain resemblances to consortia approaches and in other aspects bears certain resemblances to the concept of Teachers'Centers adapted from Great Britain. AIE is an institution that operates on the basis of a series of guiding INSET principles where the actual structural mechanisms that are created are multi-facited and flexible means to meet the needs of teachers. As needs and resources are identified appropriate structural mechanisms can be created, put to the test, and modified on the basis of experience.

One particular current INSET program of AIE that has aroused considerable interest in North American is the Open Access Study Plan (OASP).

The Open Access Study Plan (OASP)

The Open Access Study Plan is a program to enable teachers, administrators, supervisors and other school personnel to undertake graduate work leading to either a master's degree or a doctor's degree. While this program is available to experienced teachers, qualifying it as an INSET program, its wider scope might be better considered as "INSEE" - In-Service Education of Educators.

Anderson and Muir characterize the program as follows:

> "A facilitating and coordinating mechanism, it (OASP) allows students to pursue graduate study in education in several areas of concentration. It is performance based rather than collegial. On the other hand, it contains elements found in Britain's Open University and institutions like Nova University and the Union Graduate School, and in the external programs of the University of London On the other hand, it includes many traditional elements. OASP students have supervisors, committees, programs of study approved in advance, orals, candidacy examinations, theses and external examiners. It is designed to accomodate a very special group of students, students who know exactly the kind of learning they wish to pursue, where they would like to pursue it, and with whom they wish to study. Thus OASP is not appropriate for all persons interested in furthering their education".

Responsibility for OASP resides in an Academic Council comprised of two dozen persons representing eight universities, the teachers' association, the education students' association and the AIE staff. Admissions to the program is by a two-step process - eligibility and registration. A prospective student prepares a Statement of Eligibility presented to the Committee on Admissions. The granting of a Statement of Eligibility by the Admissions Committee only certifies that the student may proceed through the steps which are necessary for registration. Once this statement is received a student then works with AIE staff and external consultants to plan a complete program of study, which is then approved by the Committee on Programs and Degrees. Students have four methods of securing academic credit toward their degree:

(1) Existing university courses in local universities or even in other countries.

(2) Supervised Study or Tutorial work.

(3) Independent Study, evaluated by an external authority.

(4) Internship in a work setting, under supervision.

To illustrate the type of study program a student might work out Anderson and Muir present the following hypothetical study plan for "John MacDonald" an elementary school supervisor working in OSAP to obtain a Ph. D. degree in Curriculum and Supervision (see following page).

HYPOTHETICAL STUDY PLAN FOR "JOHN MacDONALD"

Sequence I (July 1975 - June 1976)

Course Titles	Methods of Instruction	Credit
Advanced Curriculum Theory	Summer School in Boston	6 cr. hrs.
Principles of Learning and Instruction	Summer School in Boston	3 cr. hrs.
Educational Technology	Modularized Independent Study Course	6 cr. hrs.
Graduate Colloquium	At AIE, one Saturday per month	6 cr. hrs.
		21 cr. hrs.

Sequence II (July 1976 - June 1977)

Course Titles	Methods of Instruction	Credit
Organization of the Elementary School	Upgraded M. Ed. summer school course from a local university	4 cr. hrs.
Theory of Supervision	Upgraded M. Ed. summer school course from a local university	3 cr. hrs.
Intermediate Statistics and Research Methedology	Regular university Ph. D. course (Under Dept. of Psychology)	6 cr. hrs.
Curriculum Development Internship	Affiliated with the Curriculum Development Center	6 cr. hrs.
Modern Practices in Educational Administration	Tutorial from a school superintendent	3 cr. hrs.
Supervision Practicum	Works in a local college supervising undergraduate student teaching	6 cr. hrs.
		28 cr. hrs.

Sequence III (July 1977 - June 1978)

Thesis: The effects on pupil attitudes and achievement of locally developed social studies materials for grade 5 pupils in Cape Breton County.

The OASP was developed to meet the special needs for graduate study in the Atlantic Region. The various problems identified and the responses provided by OASP have been proposed as follows: (Adapted from the report "Times Five")

1. Problem: Geographic - large area, sparse population.

   Response: OASP brings learners into contact with learning resources by mobilizing both the learners and learning resources and by deploying personnel and materials which were previously untapped.

2. Problem: Social and Economic - persons who for personal or economic reasons cannot pursue full-time study, particularly if displace from their homes for a year or more.

   Response: OASP draws no arbitrary distinctions between full-time and part-time study, or resident and extramural study.

3. Problem: Lack of opportunities for graduate study within existing institutions - some universities do not grant master's degrees, among those that do, program options are limited, and no university in the region grants the Ph. D. in the field or education.

   Response: OASP will sponsor studies throughout the region at both master's and doctoral levels.

4. Problem: Restrictions on admission at existing universities - there is little provision for those who have learned in non-traditional ways and who do not have "paper" credentials.

   Response: OASP will provide opportunities for persons who can demonstrate the results of their past learning to enroll in appropriate programs.

5. Problem: Enrollment in a single university restricts opportunities for students to combine and have access to the learning resources of many institutions.

   Response: OASP provides an overall structure which permits access to resources across institutions.

6. Problem: Many communities do not have access to graduate students as a resource to assist them in solving local educational problems.

   Response: OASP graduate students will be able to pursue projects related to local peoples in their respective comunities.

7. Problem: Educational researchers are limited in their own studies due to the absence of advanced graduate student assistants.

   Response: OASP mobilizes graduate students at all levels in a variety of fields and geographic locations.

8. **Problem**: Restrictions imposed by the nature of universities - traditional programs are often inappropriate to the needs of students and the region; class schedules and methods of learning are highly structured; and research is often removed from a student's vocational situation.

   Response: OASP provides flexibility in the nature of learning methods; open time-tabling to suit the individual student; applied research focused on problem-solving, as well as tradional theoretical research.

9. **Problem**: Many prime learning resources exist outside universities and are largely inaccessible to graduate students.

   Response: OASP enables involvement of instructors and supervisors without regard to their institutional affiliations.

AIE as an INSET MODEL

The six year history of the Atlantic Institute of Education has demonstrated it to be alternative type institution that is capable of playing a variety of roles. Basically the Institute focuses on the needs of those working in schools rather than focusing on a highly structured program designed along the traditional lines of university curricula. The latter are difficult to modify to meet individual needs, and the centralization of offerings make access difficult for a great many people.

Such a multiple-role institution necessitates the collaboration and cooperation with many other institutions - schools, school systems and universities. In an external evaluation of the Open Access Study Plan, Pedersen, Pitt and Ready point out some of the difficulties this program has faced:

> "The general impression that the visiting team was left with was one of an extremely promising program which, however, was not being well received by the universities. This is indeed unfortunate, since they should be the origin of many of the resources necessary to make that program successful. We became aware of a number of reasons for the unwillingness of universities to support the program. ... Reasons for these feeling of animosity (and this may not be too strong a word to use) between certain sectors of the University system on the one hand and the Atlantic Institute of Education on the other, appear to include the following: the defense of the academic territory and autonomy; tactical errors on the part of the Atlantic Institute of Education in developing their programs; blunders in academic protocol (for example, the listing of library resources

> that "belonged" to universities on the assumption that these resources would be available, but not checking in advance with the universities to see what their attitudes about making them available would be); a perceived special status of the AIE in the eyes of the Ministry; and many other such factors".

The external evaluation committee was highly positive in its evaluation of the Open Access Study Plan. They point out an Inset problem area where the Open Access Study Plan has particular relevance:

> "Many of the individuals to whom we spoke are responsible for the direction of schools and school systems in the area. They pointed to a great need for the development of In-service training programs and teacher-centers which would offer non-credit, continuing In-service training to teachers throughout the province. The people who man these centres would be located in the field, not necessarily at universities. It was felt that OASP could be used as a means of developing personnel for this expanded In-service, continuing education effort. There was general agreement, however, that while AIE may initiate and coordinate In-service education, it should not use its own personnel to offer such service routinely, but rather its long-range objective should be to train others for that service.."

This comment identifies an important aspect of INSET - where and how can people responsible for INSET activies further their own development and improve their competence as INSET personnel? The Open Access Study Plan seems to be one viable approach whereby people graduating from the program can return to their local unit in an INSET role.

The experience of the AIE staff in the creation, implementation and evaluation of INSET activies via a pluralistic approach has led the Director and Co-Director to speculate on some interesting "lessons" they have learned from their attempts to reform teacher education in the Atlantic province. It seems appropriate to end this case study with the comments of Anderson and Lauwreys and to give them the final word.

> "1. Real reforms in the (outer) structure of educational systems, including systems of teacher education, do not easily emerge from discussions with the units or institutions concerned. The latter generally oppose any change proposed. Major reforms come only from outside, preferably from those who control the supply of funds, e.g., governmental authorities.

"2. The weaker the institution that will be affected by a reform, the stronger their opposition to it. A really efficient and powerful institution (or group) usually has the strength and confidence to ingest or at least to adapt to any suggested reform. It has the confident feeling that it will be able to cope.

"3. Strong institutional loyalties impede reform. Such loyalties may be rooted in outworn and no longer effective religious, social, or ideological attachments - but they continue to exercise powerful effect.

"4. Objections to proposed structural reform can usually be lessened by giving assurances that no post, seniority, salary, or pension is being threatened.

"5. Institutional positions are never defended as such. They are usually justified in other ways, e.g. that small institutions are best because they provide closer and more familiar contacts between students and faculties - an argument that ignores the fact that if this be the case there ought to be many more small institutions than already exist.

"6. Small reforms in curriculum can be more easily realized than can any others.

"7. An effective attempt to achieve thorough reform in teacher education will need a deep study of strategy (long-range aims) and of tactics (immediate objectives). It will also include a careful study of what can be done through government action or Royal Commissions and what might be done by study, discussion, and committee work. Account should be taken of the fact that common sense, reason, and science are (unfortunately) weak instruments of persuasion. Decisions from above, backed by power and money, are (again unfortunately) still the strongest arguments. But this is not true of curriculum and of the inner life of educational institutions. Here science and the conscience of a profession happily dominate."

Concluding Remarks

It would be risky to over-generalize INSET trends in Canada on the basis of the two Case Studies presented. However, when other INSET projects are considered in conjunction with the two case studies some tentative conclusions may be proposed and the Canadian INSET patterns re-examined.

At present INSET activities seem to fall into two large families. First, there are those activities that are planned and carried-out by Ministries of Education, regional and local units. Very little has been said in this paper about this INSET family since the incredible variety of approaches used makes it almost impossible to describe and assess. To my knowledge there does not exist a systematic study of this type of INSET that attempts to formulate even a taxonomy of Canadian endeavors in this area. Such an undertaking would require a study of what is taking place in ten different provinces, and then attempt to abstract out patterns.

The second family of INSET activities are those that are either university-based or university related. In choosing PERMAMA and the Atlantic Institute of Education for the case studies I have been guided by the belief that for some time to come in Canada we will have to create INSET models that may differ considerably from one another and the traditional pattern, but still maintain some kind of "credit accounting" towards credentials. Having invested over the last twenty years considerable energy and monies in policies to up-grade and up-date teachers via the route of university degrees we have reached a point where it would be very difficult politically, socially and economically to dismantle this system and start over again with radically different INSET policies. Moreover teachers and teachers' unions see the degree credentialing system as a means of job security, promotion and salary increase, and will tolerate to engage in INSET activities that they frequently openly and bitterly criticize as "useless", in terms of their own professional development as teachers.

The PERMAMA and AIE models seem to me to contain several aspects that may be pointing to future directions in INSET within Canada and these may be submitted as tentative conclusions.

1. INSET planners must shift the center of focus to the teacher-on-the-job and make every attempt to understand the actual problems teachers face in today's schools. One of the great problems of university-based INSET is that university personnel live in a different world than the world of elementary/secondary school teachers. Somehow INSET models will have to be created and tried-out that interpenetrate these two worlds, and this will continue to be difficult.

2. Basically INSET is a curriculum problem where the learners are teachers. Many of the ideas that are proposed for childrens' learning such as individualization, decision-making, continuous progress, responsabilities for their own learning, etc. would seem to apply just as well to adult learners, particularly if such ideas are put forth as fundamental principles that hold regardless of age.

3. Teacher education for well over a century seems to have been largely concerned with producing or helping a teacher as "a technician in the transmission of knowledge". The models created were capable of producing large numbers of uniform teachers for school systems that needed an ever increasing supply of teachers. Today the quantitative production of uniform teachers is an embarassment, not a necessity. Models that continue to be patterned on the image of "teacher-as-technician", and to design mechanisms along lines of quantitative production of a uniform product, are just simply disfunctional in Pre-Service and INSET. PERMAMA and AIE both seem to be deeply concerned with helping teachers look more deeply into the meaning of the educative process and looking into themselves as adults who have choosen to help the young.

4. In education, obviously including INSET, we are still living off the 19th century -- its school systems, its educational laws, its systems of beliefs, attitudes and values, and ofttimes its educational structures.

The massive efforts at educational reform in many countries since 1945 have been valiant attempts to re-form the structures (curriculum structures, staff structures, administrative structures, architectural structures, etc.). It seems more and more clear that in the decades ahead what needs re-form are not the educational structures as such, but the underlying conceptual base of knowledges, beliefs, attitudes and values we hold concerning the relations of the adults and the young. It is from this deeper re-form that new structures will be created that will make a difference. INSET is a privileged place to work at this.

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